CanWorks® Operator Interface Tracking PLUS

for CanWorks® Systems with SM-2 Spray Monitors

User Guide
Part 1018132A

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Table of Contents

Introduction

The Nordson® CanWorks® Operator Interface Tracking PLUS software is a PC-based graphical user interface for Nordson CanWorks SM-2 spray monitor modules. It can support up to 24 SM-2 modules and 6 UI-1 display modules on a single network. Use the Operator Interface (OI) to configure SM-2 modules, set fault warning and alarm levels, monitor system operation, and collect data for statistical process control (SPC) and maintenance scheduling.

The OI only supports CanWorks systems using SM-2 spray monitors. At least one UI-1display module must be present on the network in order for the CanWorks system to operate properly, since UI-1 display modules contain the system memory used to retain spray monitor configuration settings, plus the clock used to time and date stamp faults. When the system is powered up, the configuration settings are downloaded to the spray monitors from the UI-1 memory.

Comments and suggestions are welcomed. Please inform Nordson Corporation of any program abnormalities; they will be logged into our defect tracking system.

Using Help

This help system can be accessed by

- clicking on **Help>Help Topics**
- pressing the **[F1]** key
- clicking on the **Fault Help** button on the Fault History window

The **[F1]** key opens help on the topic most likely to apply to the currently open window or dialog box. The **Fault Help** button opens the help topic specific to the current fault.

Setup

Before you use the CanWorks system for regular production, you must set up the OI and the SM-2 modules. Refer to *OI and SM-2 Setup* for instructions and procedures.

OI Components

The OI's main screen consists of a

- menu bar, tool bar, and group tabs at the top of the screen,
- a tab window,
- SM-2 module faceplates,
- and a status bar at the bottom.

Menu Bar

The menu bar has three menus: **File**, **Tools**, and **Help**. When you click on a menu, it drops down and lists the selections available. If a selection is gray, it is not available until you log on with the proper security level. Clicking on the selections opens windows that provide access to OI functions.

Tool Bar

The tool bar has a series of buttons on it: **Log On/Off**, **Fault Status**, **Faults**, **Copy Configuration**, and **Graphs**. Clicking on the buttons opens windows that allow you to view performance or operation data for the SM-2 modules, or copy a configuration from one module to another. If a selection is gray, it is not available until you log on with the proper security level.

Group Tabs

When you create a group of modules, a tab is created for the group. Clicking on a group tab opens the group window. The **All Modules** group is always present and contains all the SM-2 modules on the network.

Group Windows

Each group window contains faceplates for the SM-2 modules in that group. Faceplates can be tiled in the window, or dragged and dropped to any location in the window.

Faceplates

Each faceplate represents one SM-2 module. They allow the operator to visually monitor system operation. The faceplates consist of a label bar at the top; an animated picture of the operating status of the module; a fault status bar; data fields that display actual base, fire, and delta (psi change between base and fire) pressures along with expected fire pressure; and an **Options** button.

The label bar, fault bar, and Options buttons change color to indicate operation status. They are

- green during normal operation
- yellow when a warning occurs
- red when an alarm occurs

Status Bar

The status bar contains OI messages and buttons. From left to right, they are:

- CanWorks logo
- User name
- Fault status message (appears only if a fault occurs)
- **Online**/**Offline** indicator
- Date and time

NOTE: The OI is offline when it is not communicating with any SM-2 modules. The Offline indicator is red.

Known Issues

OI Loading Time

The OI may take over a minute to load on Windows 2000 systems that use MacAfee VirusScan software. To speed up the loading time, remove the INI files from the list of files to scan:

1. Right mouse click on the VirusScan shield located in the system tray at the bottom of the screen.
2. Select **Properties>System Scan**.
3. Click on **Extensions** under **What to Scan**.
4. Select INI from the **Program File Extensions** list.
5. Click on **Delete**, then **OK**.
6. Click on **OK** to save the changes and exit **System Scan Properties**.

HP LaserJet Monochrome Printer Driver

Windows NT and 2000 Users – If colored text and lines on graphs are not printing on HP LaserJet monochrome printers, install a new version of the HP printer driver. Contact Hewlett Packard at **www.hp.com**.

Screen Refresh Time

Screen Refresh Time

The number of SM-2 modules connected to the network affects the screen refresh time. No data is lost during screen refreshes.

As more modules are connected, the screen refresh time increases as follows:

Number of SM-2 Modules	Screen Refresh Time (Seconds)
3	2
6	8
9	16
12	20
15	22
18	25
21	28
24	31

Security Administration

Security Levels

Security Level Required: Supervisor

Security levels are assigned to users when they are added to the OI. The security level assigned to a user determines the OI functions the user can access:

Security Level	Functions
No Operator	Can view all data, plus can reset faults.
Operator	Has all the privileges of **No Operator**, plus the ability to change spray monitor settings.
Supervisor	Has all the privileges of an **Operator**, plus the ability to exit the OI, group SM-2 modules, change system options, configure data logging parameters, and perform security administration (add, modify, and delete users).

Initial Log On

When the OI is loaded, it defaults to the **No Operator** security level. Only routine CanWorks system monitoring and fault reset functions are available at this security level. To perform all other functions the user must log on to the OI as an **Operator** or **Supervisor**. Users must be set up by a **Supervisor** and given a security level and password.

When the OI is installed, a default user is created with supervisor-level access. Log on using the following user name and password to gain access to the **Security Administration** dialog box.

User Name: Supervisor
Password: super

NOTE: User names and passwords are not case-sensitive.

To log on as the default user **Supervisor**:

1. Click on the **Log On** button at the top of the screen or **Tools**>**Log On**. The **Login** dialog box appears.
2. Click on the  arrow in the **User Name** field and select **Supervisor** from the drop-down list.
3. Press the **[Tab]** key to move the cursor to the **Password** field, or click in the field.
4. Type **`super`** in the **Password** field.
5. Click on **OK**. The logged-on user name appears on the status bar at the bottom of the runtime screen.

6. Click on **Tools**>**Add/Remove Users** to add users and assign them security levels and passwords. Make sure at least one user is assigned supervisor-level access. Record all user passwords. When finished setting up users, delete the default user, if you want to maintain security.

NOTE: Users are automatically logged out when the log on timeout period expires. The default timeout period is 10 minutes. Only personnel with a Supervisor security level can change the timeout period or disable the timeout.

Logon Timeout

Security Level Required: Supervisor

Users are automatically logged out when the logon timeout period expires. The default timeout period is 10 minutes. Personnel with a Supervisor security level can either change the timeout period or disable the timeout.

1. Click on **Tools>Options>Security**.
2. Either **Disable** or **Enable** the **Logon Timeout** function.
3. If **Enable** was selected,
   a. Select the **Log On Timeout Units**.
   b. Select the **Log On Timeout Duration** value.
4. Click on **OK** to save the settings and close the **Options** window.

Logging On

1. Click on the **Log On** button at the top of the screen, or on **Tools**>**Log On**. The **Login** dialog box appears.
2. Click on the arrow in the **User Name** field and select your user name from the drop-down list.
3. Click in the **Password** field and type in your password.

NOTE: User names and passwords are not case-sensitive.

4. Click on **OK**. The **Login** dialog box disappears and your user name appears on the status bar. The **Log On** button on the tool bar changes to a **Log Off** button.

NOTE: Users are automatically logged out when the log on timeout period expires. The default timeout period is 10 minutes. Only personnel with a Supervisor security level can change the timeout period or disable the timeout.

Adding a User

Security Level Required: Supervisor

1. Click on **Tools**>**Add/Remove Users** to open the **Security Administration Form**.
2. Click on the **User Information** tab.

NOTE: User names and passwords are not case-sensitive.

3. In the **User Name** field, type in a user name.

4. Click on the arrow in the **Level** field and select the desired security level for the user.
5. In the **Password** field, type in a password.
6. In the **Confirm Password** field, type in the password again.
7. Click on the **Add New User** button. The new user is added to the OI user list.
8. To make sure you correctly entered the user, click on the arrow in the **User** field and select the user name you just added. The security level you selected appears in the field below the **User** field.

NOTE: Make sure at least one user is assigned supervisor-level access. Record all user passwords.

Deleting a User

Security Level Required: Supervisor

1. Click on **Tools**>**Add/Remove Users** to open the **Security Administration Form**.
2. Click on the **User Information** tab.
3. Click on the arrow in the **User** field and select the user name.
4. Click on the **Delete User** button.
5. Click on **Yes** to delete, **No** to cancel.

Modifying User Security

Security Level Required: Supervisor

1. Click on **Tools**>**Add/Remove Users** to open the **Security Administration Form**.
2. Click on the **User Information** tab.
3. Click on the arrow in the **User** field and select the user name. The security level for the user appears in the field below the **User** field.

Changing Security Levels

1. Click on the arrow in the **New Level** field and select the new security level.
2. Click on the **Update Level** button.

Changing Passwords

1. Type a new password in the **New Password** field. Passwords are not case-sensitive.
2. Type the new password in the **Confirm Password** field.
3. Click on the **Update Password** button.

NOTE: Save your user profile when you are done modifying users. Click here to learn how to do this.

Saving and Restoring User Profiles

Security Level Required: Supervisor

You can save and restore user profiles. When you save a user profile, the OI creates a file that contains all current user names, assigned security levels, and passwords.

Accessing the Security Administration Form

1. Click on **Tools**>**Add/Remove Users**.
2. Click on the **User Information** tab.

Saving the User Profile

CAUTION: If you save the user profile to a drive or directory where an existing profile file is located, the new file automatically overwrites the old file.

1. Click on the **Copy** button. The **Select Folder to Copy To** dialog box appears.
2. Use the navigation buttons and fields to select a drive and/or folder to save the profile file in. Any drive your PC can write to can be used.
3. Click on **Open**. A file named **`ndsnPW.npw`** is saved.

Restoring the User Profile

CAUTION: When you restore a user profile file, you overwrite the current user profile.

1. Click on the **Restore** button. The **Get File to Restore** dialog box appears.
2. Use the navigation buttons and fields to select the drive and/or directory on which the profile file is stored. Profile files are named **`ndsnPW.npw`**.
3. Click on **Open**. The user profiles are restored to the OI.

NOTE: If a user forgets their password, you can give them a new password by modifying their security.

Viewing the Log File

Security Level Required: Supervisor

The log file records the date, time, user name, security level, and transaction type for every action that affects system security.

1. Click on **Tools**>**Add/Remove Users** to open the **Security Administration Form**.
2. Click on the **Log File** tab.

Exporting the Log File

Security Level Required: Supervisor

1. Click on **Tools**>**Add/Remove Users** to open the **Security Administration Form**.
2. Click on the **Log File** tab.
3. Click on the **Copy** button.

4. Select a drive and/or directory. Any drive accessible to your PC can be used.
5. Click on **Open**. A file named **`ndsnSLog.dat`** is saved. This file can be imported into a spreadsheet or database program.

Clearing the Log File

Security Level Required: Supervisor

1. Click on **Tools**>**Add/Remove Users** to open the **Security Administration Form**.
2. Click on the **Log File** tab.
3. Click on the **Clear** button. All records in the current log file are deleted.

Logging Off

When you log off the OI, it reverts to **No Operator** and continues to run. To log off the OI do one of the following:

- Click on the **Log Off** button on the status bar.
- Click on **Tools>Log** Off.

When no user is logged on, **No Operator** appears on the taskbar.

To exit the OI, you must log on with supervisor-level access.

Exiting the OI

Security Level Required: Supervisor

You must be logged on with supervisor-level access to exit the OI. Exiting the OI does not affect CanWorks system operation. However, no data is logged while the OI is shut down.

To exit the OI click on **File**>**Exit**. The OI shuts down and returns you to the Windows desktop.

OI and SM-2 Setup

Setup Procedures

Follow these procedures to setup and configure the OI and the SM-2 modules on the network:

1. Set the time and date on the UI-1 (CanWorks Display Module). Refer to the *CanWorks Display Module* manual for instructions. When finished, return the UI-1 display to a runtime screen.

NOTE: The UI-1 display must ALWAYS be set on a runtime screen while using the CanWorks OI. If you use the UI-1 display module to calibrate or configure an SM-2 module, reset the UI-1 display to a runtime screen when done. If you leave the display on a configuration screen and then attempt to configure or calibrate that SM-2 module from the OI, you will get a **Module is Busy** error message.

2. Log on to the OI with supervisor-level access.
3. Set the OI Network Address and Device Name.
4. Set up the OI:
   a. Create a Main Screen Title.
   b. Set the Time and Date Formats.
   c. Enable or disable the Fault Indicator Popup.
5. Set up data logging:
   a. Enable or disable Data Logging.
   b. Set the Data Logging Rate.
   c. Enable or disable Auto Export.
   d. Set a destination for exported data files.
6. Create SM-2 module groups, if desired.
7. Set up the SM-2 modules:

   NOTE: You can set up one module, then copy its configuration to any or all other modules on the network.
   a. Assign each module a Label.
   b. Set the Smoothing time.
   c. Set Failsafe Status.
   d. Set the Transducer Range.
   e. Set the Arm Delay time.
   f. Enter the Pressure Setting.
8. Set up Faults for each module:
   a. Set the Low and High Flow Fault Bands.
   b. Set the Fault Status.
   c. Set the Relay Status.
   d. Set the Tolerance.

OI Setup

Creating a Main Screen Title

Security Level Required: Supervisor

The main screen title is displayed at the top left of the OI window, in the title bar.

1. Click on **Tools**>**Options**. Click on the **Display** tab.
2. Type a new name in the **Title** field.
3. Click on **OK**. The new name appears in the main screen title bar.

Setting Time and Date Formats

Security Level Required: Supervisor

The time and date formats are used in the **Fault History** window. Time can be displayed in 12-hour or 24-hour format. Dates can be displayed as Month/Day/Year (MM/DD/YYYY) or as Day-Month-Year (DD-MM-YYYY).

1. Click on **Tools**>**Options**. Click on the **Display** tab.
2. To change the time format, click on the arrow in the **Time Format** field. Select the desired format.
3. To change the date format, click on the arrow in the **Date Format** field. Select the desired format.
4. Click on **OK** to accept the settings and close the **Options** window.

Setting the Fault Indicator Popup Status

Security Level Required: Supervisor

The fault indicator popup appears in the center of the main screen when the OI detects a fault. The popup flashes between red and yellow to attract attention.

Default: Enabled

1. To disable or enable the fault indicator popup, click on **Tools**>**Options**. Click on the **Display** tab.
2. Click on the **Fault Indicator Popup Enabled** or **Disabled** radio button. When selected, a black dot appears in the center of the radio button.
3. Click on **OK** to accept the settings and close the **Options** window.

Network Configuration

Security Level Required: Supervisor

Network configuration consists of choosing the network adapter device name and assigning it a unique network address.

Device Name

When configuring the OI you must select the device name of the network adapter so that the OI will use it to communicate with the CanWorks network.

1. Click on **Tools**>**Options**. Click on the **Display** tab.
2. Click on the arrow in the **Device Name** field and choose the device name of the network adapter. Depending upon the operating system, if you are using an SLTA-10 serial adapter the device name is either SLTALON1 or LON1.

Network Address

Each device on the CanWorks network must have a unique network address. The network address is a number from 0 to 31. You should keep a record of the network addresses for all devices on the network. Blank record sheets are provided in both the UI-1 and SM-2 manuals.

The default network address for the OI is 31. To change the network address for the OI follow these steps:

1. Click on **Tools**>**Options**. Click on the **Display** tab.
2. Click on the or arrows in the **OI Address** field to increase or decrease the address number.
3. Click on **OK** to accept the settings and close the **Options** window.

Network Termination

The network must be connected in a "daisy chain" configuration and be properly terminated at each end. The default state of the network termination switch is ON for the UI-1 display modules and OFF for the SM-2 modules.

The OI network adapter does not have a network termination switch: its default state is OFF. If the OI network adapter must be at the physical end of the network then you must install a 121 ohm 1% ¼ watt resistor across the network wiring at the adapter connector.

Data Logging Setup

About Data Logging

Security Level Required: Supervisor

While the OI is running, it can record operating and fault data for all of the SM-2 modules on the network. It stores this data in log files, creating a file each day for each module. This data is also used for the OI's graphing function.

The data can be automatically or manually exported to Comma Separated Variable (CSV) files. The CSV files can be imported into spreadsheets or databases for statistical analysis.

If you want the OI to log data, you must enable data logging. If you want to export the data to CSV files, enable Auto Export or manually export the data.

Clock Synchronization

As operating data is logged, it is time and date stamped by the OI, using the PC clock. As faults occur they are time and date stamped by the UI-1 clock.

To avoid losing fault data, make sure the PC and UI-1 clocks are synchronized. The OI only logs faults that occur after it is started. If the UI-1 clock is an hour behind the PC clock, then for the first hour of OI operation any faults that occur will not be logged, since to the OI the faults occurred before it started.

Refer to the *CanWorks Display Module* manual for instructions on how to set the date and time on the UI-1. Use **Date/Time** on the Windows **Control Panel** to set the PC clock.

Data Log File Names

Each log file contains information from one SM-2 module, for one day. The file naming convention is

n m_yyyymmdd.csv

where n is the network number, m is the module number, yyyy is the year, mm the month, and dd the day.

For example, the log file created on June 13, 2001 for Network 1, Gun 1, is named:

1 1_20010613.CSV

At midnight (12 or 24 hour mode) a new file is created for the module with the file name:

1 1_20010614.CSV

Data Log File Contents

The data logged includes:

Data Log File Contents	
Data	**Description**
Log Date	Date data written to the log file, from the PC clock. The log file is closed at midnight.
Log Time	Time data written to the log file, from the PC clock. The log file is closed at midnight.
Poll/Err Date	Date data polled, from the PC clock, or date fault occurred (Error Code is any number other than zero), from the UI-1 clock.
Poll/Err Time	Time data polled, from the PC clock, or time fault occurred (Error Code is any number other than zero), from the UI-1 clock.
Base Pressure	Pressure measured by the transducer when the gun is not spraying.

Data Log File Contents	
Data	**Description**
Depending upon application: Fire Pressure or Delta Pressure	Pressure measured by the transducer when the gun is spraying, or drop in pressure from base when guns fires. If a fault occurs the fire or delta pressure is logged into the SM-2 module's fault history record.
Error Level	None, Warning, or Alarm.
Reserved	Not used; always 0.
Depending upon application: Expected Fire Pressure or Expected Delta Pressure	Fire pressure setting or Delta pressure setting
Old/New Base Pressure	1 = new pressure 0 = old pressure **NOTE:** The graph does not plot old pressures.
Old/New Fire Pressure	1 = new pressure 0 = old pressure **NOTE:** The graph does not plot old pressures.
Fire Pressure (Flow) Low Alarm Band	Fire pressure that generates Low Flow Alarm.
Fire Pressure (Flow) Low Warning Band	Fire pressure that generates Low Flow Warning.
Fire Pressure (Flow) High Warning Band	Fire pressure that generates High Flow Warning.
Fire Pressure (Flow) High Alarm Band	Fire pressure that generates High Flow Alarm.
Interval	OI network data collection (polling) interval.
Interval Units	Time units for polling interval.
Label	Name given to module during setup.
Network	Network that the module is on.

Data Log File Contents	
Data	**Description**
Module	Network address for module.
Module Type	SM-2

Enabling Data Logging

Security Level Required: Supervisor

You must enable data logging if you want to view and print graphs or record and export operating and fault data to Comma Separated Variable (CSV) files.

Default is **Enabled**.

1. Click on **Tools**>**Options**. Click on the **Data Log** tab.
2. Click on the **Data Logging Enabled** or **Disabled** radio button. When data logging is enabled, a black dot appears in the center of the radio button.
3. Click on **OK** to accept the settings and close the **Options** window.

Setting Data Logging Rate

Security Level Required: Supervisor

Data logging is done at intervals. The interval can be set from 5–59 seconds, 1–59 minutes, or 1–59 hours. When the interval expires, the last data read from the SM-2 is logged. This setting does not affect the OI polling rate, which is not user-configurable, or the recording of faults. All faults are recorded, regardless of the data logging rate.

Default: 30 Seconds

1. To set the data logging rate, click on **Tools**>**Options**. Click on the **Data Log** tab.
2. Click on the **Seconds**, **Minutes**, or **Hours** radio button to select the **Units** interval. When selected, a black dot appears in the center of the radio button.
3. Click on the or arrows in the **Interval** field to increase or decrease the interval.
4. Click on **OK** to accept the settings and close the **Options** window.

Enabling Auto Export

Security Level Required: Supervisor

The logged data is automatically exported to a Comma Separated Variable (CSV) file when **Auto Export** is enabled. If it is disabled, no CSV file is created, but the OI continues to log data. The logged data can be manually exported by the operator.

1. To enable or disable **Auto Export**, click on **Tools**>**Options**. Click on the **Data Log** tab.
2. Click on the **Auto Export Enabled** or **Disabled** radio button. When auto export is enabled, a black dot appears in the center of the radio button.

3. Click on **OK** to accept the settings and close the **Options** window.

NOTE: You must set a destination for the exported data to use **Auto Export**. The current day's data cannot be exported.

Setting the Destination for Exported Data

Security Level Required: Supervisor

To use Auto Export, you must specify a drive and/or directory (folder) for the data files. Any drive or directory that the PC can write to can be used.

1. Click on **Tools**>**Options**. Click on the **Data Log** tab.
2. Click on the **Browse** button.

NOTE: The **Browse** button is not enabled unless **Auto Export** is enabled.

3. Find the drive and directory on which you want to store the data files.
4. Select the directory by clicking on it, then click on **OK**. The path name (drive:\folder) appears in the **Directory** field.
5. Click on **OK** to accept the settings and close the **Options** window.

Manually Exporting Data

Security Level Required: Supervisor

In addition to the Auto Export function, you can manually export data as Comma Separated Variable (CSV) files from any SM-2 module at any time, to any drive or directory (folder) your PC can write to.

NOTE: The current day's data is not available for export until the OI closes the log file and creates a new file. This happens at midnight if the OI is running, or the next time you start the OI. Active (open) log files have a CDL extension.

1. To manually export an SM-2 data file click on **File**>**Export**. The **Export Logged Data** dialog box appears.
2. The export destination defaults to the current destination setting. If you want to export the data to a different drive or directory, click on the **Browse** button, select the desired drive and directory, and click on **OK**. The path name (drive:\folder) appears in the **Directory** field.

   NOTE: If you change your mind after selecting a new destination, click on the **Restore Default Export Directory** button to revert to the current destination setting.
3. Select the file you want to export from the list in the right-hand window (**Select Files To Export From Available Data**).
4. Click on the **Export Data** button. The exported data file appears in the left-hand window, along with any previously exported data files in the same drive/directory.

SM-2 Module Setup

Copying Configurations

Security Level Required: Operator

To make module setup easier and quicker, you can copy configurations from one module (the donor) to another (the recipient).

NOTE: To copy the configuration of a module in one group to a module in another group, click on the **All Modules** tab before opening the **Copy Module Configuration** dialog box.

To copy a configuration:

1. Click on the **All Modules** group tab, or, if both the donor and recipient modules are in the same group, the specific group tab.
2. Click on the **Copy Configuration** button in the button bar. The **Copy Module Configuration** dialog box opens, with the group name in the title bar.
3. Click on the  arrow in the **From** field and select the donor module.
4. Select the recipient modules listed in the **To** field by clicking on the check boxes to the left of the module names.
5. Click on the **Copy** button.
6. Click on the **Close** button.

NOTE: Before starting production, you must assign the recipient module a label and set the fault status. Faults are disabled on the recipient module.

7. To finish setting up the recipient modules do the following, from the **Options** menu on each module's faceplate:
    a. Assign a new label.
    b. Set the fault status.

Grouping

Spray Monitor Grouping

Security Level Required: Supervisor

When you start the OI, it polls the network and finds all SM-2 modules on the network. It creates an animated faceplate in the **All Modules** group window for each module it finds. You can create groups of SM-2 modules for easier management and monitoring. For example, if your CanWorks network connects SM-2 modules installed on two or more production lines, you can create a group for each line. The OI creates a tab on the main screen for each group you create.

1. To access the grouping functions click on **Tools**>**Options**. The **Options** window opens.
2. Click on the **Group** tab.

The **Group** window includes two lists. The left-hand list shows the existing groups, in the order in which their tabs appear on the main screen. The right-hand list shows the modules assigned to the currently selected group. The **All Modules** group is created by the OI and lists all the modules detected on the network. The **All Modules** group can never be deleted or renamed.

Creating a Group

Security Level Required: Supervisor

1. Click on **Tools**>**Options**. Click on the **Group** tab.
2. Click on the **Add** button. The **Add Group** dialog box appears.
3. Type a name for the group in the **Group Name** field, then click on **OK**. The group you created is added to the **Groups** list.

Adding a Module to a Group

Security Level Required: Supervisor

1. Click on **Tools**>**Options**. Click on the **Group** tab.
2. Select the **All Modules** group on the **Groups** list.
3. Select the module that you want to add to your group from the **Modules** list.
4. Click on the **Copy** button. The **Copy Module** dialog box appears.
5. Click on the  arrow in the **To Group** field and select the group to which you want to add the module.
6. Click on **OK**. The module is added to the group. Repeat these steps to add more modules to the group.
7. To view the modules in the group, select the group from the **Groups** list.

Deleting a Module from a Group

Security Level Required: Supervisor

1. Click on **Tools**>**Options**. Click on the **Group** tab.
2. Select the group from the **Groups** list.
3. Select the module you want to delete from the **Modules** list.
4. Click on the **Delete** button in the **Module** box. The module is removed from the **Modules** list.

Deleting a Group

Security Level Required: Supervisor

1. Click on **Tools**>**Options**. Click on the **Group** tab.
2. Select the group from the **Groups** list.
3. Click on the **Delete** button in the **Group** box. The group is deleted.

Renaming a Group

Security Level Required: Supervisor

1. Click on **Tools**>**Options**. Click on the **Group** tab.
2. Select the group from the **Groups** list.
3. Click on the **Rename** button. The **Rename Group** dialog box appears.
4. Type a new name for the group in the **New Group Name** field.
5. Click on **OK**. The group is renamed.

Changing the Group Tab Order

Security Level Required: Supervisor

The order in which groups appear on the **Groups** list determines the order in which their tabs appear on the main screen.

1. Click on **Tools**>**Options**. Click on the **Group** tab.
2. Select the group whose tab you want to move.
3. Click on the **Move Up** or **Move Down** button. The group is moved once for each click.
4. When the group is in the desired position, click on **OK**. The group tab now appears in the position you selected.

Configuration

SM-2 Module Labels

Security Level Required: Operator

SM-2 module labels appear at the top of the module faceplates and on the tabs for various OI windows. Assign each SM-2 module a unique label to avoid any confusion.

1. Click on **Options**>**Setup** on the module faceplate. Click on the **Configuration** tab.
2. Click in the **Label** field.
3. Type in a label for the module.
4. Click on **OK** to accept the setting and close the **Setup** window. The label appears in the label bar at the top of the faceplate.

Smoothing

Security Level Required: Operator

Smoothing is the time in milliseconds after the Arm Delay expires that the SM-2 samples the signal from the pressure transducer while the gun is spraying. To select a setting:

1. Click on **Options**>**Setup** on the module faceplate. Click on the **Configuration** tab.
2. Click on the  arrow in the **Smoothing** field to view the settings:

Setting	Sample Time (ms)
None	5
1	10
2	20
3	40
4	80
5	160

3. Select the desired setting, then click **OK**. The new setting is saved and appears in the **Smoothing** field.

Failsafe Status

Security Level Required: Operator

The default behavior of the warning and alarm LEDs and relays in the SM-2 modules default to normally off and normally open (**Failsafe Off**). You can change their operation to normally on and normally closed (**Failsafe On**). With **Failsafe On**, the warning and alarm relays stay closed and LEDs on the SM-2 module remain on until a fault occurs, when the relays open and the LEDs turn off.

Default: Off

1. Click on **Options**>**Setup** on the module faceplate. Click on the **Configuration** tab.
2. Click on the desired **Failsafe On** or **Off** radio button  . When failsafe is on, a black dot  appears in the center of the radio button.
3. Click on **OK** to accept the setting and close the **Setup** window.

Transducer Range

Security Level Required: Operator

Pressure transducers are available in 0–600 psi or 0–1500 psi (0–41 or 0–103 bar) ranges. Each transducer includes an external amplifier. The part number of the transducer is stamped on the amplifier.

Part Number	Pressure Range	Maximum Temperature Range
771220	0-600 psi	71 °C (160 °F)
332768	0-600 psi	204 °C (400 °F)
333055	0-1500 psi	71 °C (160 °F)

For proper SM-2 operation you must select the pressure range of the pressure transducer mounted on the spray gun.

1. Click on **Options**>**Setup** on the module faceplate. Click on the **Configuration** tab.
2. Click on the desired **Transducer Range** radio button ○. When selected, a black dot ◉ appears in the center of the radio button.
3. Click on **OK** to accept the setting and close the **Setup** window.

Arm Delay

Security Level Required: Operator

Arm Delay

- is the time in milliseconds that the SM-2 delays sampling the signal from the pressure transducer after receiving a gun trigger signal from the timer.
- prevents electrical noise generated at the beginning of the spray cycle from triggering a false warning or alarm.
- must be in the range of 2 to 2047 milliseconds (ms).

The valid range for Arm Delay is read from the SM-2 when the OI starts up and scans the network for modules.

To enter an Arm Delay:

1. Click on **Options**>**Setup** on the module faceplate. Click on the **Configuration** tab.
2. Click on the **Arm Delay, ms** field.
3. Enter a value from 2 to 2047 ms.
4. Click on **OK** to save the Arm Delay setting and exit **Configuration**.

Pressure Setting

Security Level Required: Operator

There are two pressure setting functions that are based upon your SM-2 firmware version; **Expected Fire Pressure** and **Expected Delta Pressure**. The function choice depends on your application.

To access these functions:

1. Click on **Options**>**Setup** on the module faceplate.
2. Click on the **Configuration** tab.

Expected Fire Pressure

1. Start spraying product and adjust the fluid pressure until you obtain the desired results.
2. Click on 

to update the pressure transducer reading. Two pressures appear:
   - The regulated system pressure appears in the **Base, psi** field.
   - The average firing pressure appears in the **Fire, psi** field and 

is enabled. Click on this button to enter the fire pressure into the **Expected Fire Pressure, psi** field. The desired fire pressure can also be typed into this field.

     If - - - - appears in this field, the gun is not firing and 

is disabled.
3. Click on **OK** to save the pressure value and exit **Configuration**.

Expected Delta Pressure

1. Enter the expected delta pressure into the **Delta, psi** field.
2. Click on 

to enter the delta pressure into the **Expected Delta Pressure, psi** field. The desired delta pressure can also be typed into this field.
3. Click on **OK** to save the pressure value and exit **Configuration**.

Fault Setup

Fault Bands

Security Level Required: Operator

Fault Band Description

The fault band settings allow you to set threshold levels for **Warnings** and **Alarms**. Depending upon your SM-2 firmware version,

- a pressure drop less than that expected indicates either a low flow or high-pressure condition, which could mean that not enough coating was sprayed.
- a pressure drop greater than that expected indicates a either high flow or low-pressure condition, which could mean that too much coating was sprayed.

There are two fault band functions; **Expected Fire Pressure Defaults** and **Expected Delta Pressure Defaults**. The SM-2 either enables or disables a fault band function based upon your application requirements.

Expected Fire Pressure Defaults

The following defaults apply if you enter an expected fire pressure setting:

Low Alarm: - 50 psi

Low Warning: -25 psi

High Warning: +25 psi

High Alarm: +50 psi

Expected Delta Pressure Defaults

Depending upon your SM-2 firmware version, the following defaults apply if you enter a delta pressure setting:

Alarm Band % 50

Warning Band % 25

OR

Low Flow Alarm % 30

Low Flow Warning % 60

High Flow Alarm % 150

Each band is a percentage of the expected pressure drop when the spray gun fires. The difference between base and fire pressure is defined as 100%.

Setting Fault Bands

1. Click on **Options**>**Setup** on the module faceplate. Click on the **Fault** tab.
2. Click on the ▲ or ▼ arrows in the **Fault Bands** fields to increase or decrease the values.
3. Click on **OK** to accept the settings and close the **Setup** window.

To restore the fault bands to the default settings, click on the **Restore Defaults** button.

Setting Fault Status

Security Level Required: Operator

Four status settings are available for fault warnings and alarms:

- **Off**: Alarms and warnings are disabled
- **On**: Alarms and warnings are enabled
- **Alarms Only**: Alarms are enabled, warnings are disabled
- **Warnings Only**: Warnings are enabled, alarms are disabled

Default: Off

1. To set fault status click on **Options**>**Setup** on the module faceplate. Click on the **Fault** tab.

2. Click on the desired **Status** radio button. When selected, a black dot appears in the center of the radio button.

3. Click on **OK** to accept the settings and close the **Setup** window.

Setting Relay Status

Security Level Required: Operator

SM-2 modules have two sets of relays available for use. The relays open or close on warning or alarm faults. You can turn the relays on or off. When the relays are off, only the LEDs on the SM-2 modules and the OI fault indicators alert the operator to a system fault.

Default: On

1. To turn the relays on or off click on **Options**>**Setup** on the module faceplate. Click on the **Fault** tab.

2. Click on the **Relays On** or **Off** radio button. When selected, a black dot appears in the center of the radio button.

3. Click on **OK** to accept the settings and close the **Setup** window.

NOTE: Relays can be set to normally open or normally closed by setting the Failsafe Status.

Setting Fault Tolerance

Security Level Required: Operator

Depending upon your SM-2 firmware version, the fault tolerance can be set to increase the number of faults that must occur before the SM-2 generates an alarm or warning. A value of 1 means that Tolerance function is disabled and the SM-2 handles faults in its typical manner. A value of 2 or higher enables the Tolerance function.

NOTE: Some applications do not use the Tolerance function.

Perform the following:

1. Click on **Options**>**Setup** on the module faceplate. Click on the **Fault** tab.

2. Enter a value in the **Tolerance** field(s).

3. Click on **OK** to save the tolerance value and close the **Setup** window.

Operation

OI Operation

Startup

The Echelon® SLTALink Manager and CanWorks Operator Interface Tracking PLUS installation programs install shortcuts in Windows Startup so that both programs are started when Windows starts. The SLTALink Manager MUST be running in order to run the OI.

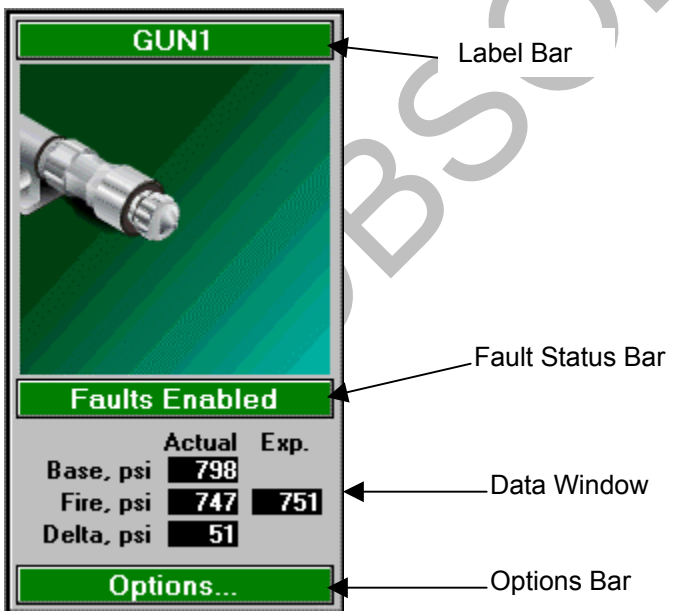
NOTE: If you remove the startup icons from Windows Startup, make sure you start the SLTALink Manager before starting the OI. If you shut down the SLTALink Manager while the OI is running, you must shut down the OI, then restart the SLTALink Manager before restarting the OI.

Faceplates

When the OI is started, it polls the network and creates a faceplate for each SM-2 module on the network. Each faceplate displays the operating status and operating pressures for the spray gun connected to the SM-2 module.

The faceplates are the equivalent of the runtime screens displayed on the CanWorks UI-1 display module. The faceplates can be organized into groups. By clicking on a group tab, you can view all the faceplates in a group. If you click on the **All Modules** tab, you can view the faceplates for all SM-2 modules in the system at once.

An illustration of a faceplate is show below.



Label Bar

The faceplate label is assigned during module configuration. Although two or more modules can have the same label, each module should be given a unique label to avoid confusion.

Fault Status Bar

During normal operation, the fault status bar is green and fault status is displayed as **Enabled** or **Disabled**. If the SM-2 module is turned off, the fault status changes to **Offline**.

If a warning fault occurs, the bar changes to yellow and the fault text changes to **Warning**. If an alarm fault occurs, the bar changes to red and the fault text changes to **Alarm**. Clicking on the fault status bar opens the **Fault History** window.

Data Window

The data window shows actual base, fire, delta, and expected pressures, in psi. Delta pressure is the pressure drop when the spray gun fires.

NOTE: The OI polls the SM-2 modules for base and fire pressures at intervals several seconds in length, depending on the number of modules on the network. Therefore, the actual base and fire pressures are average pressures for the last sample period.

Options Bar

Click on the **Options** bar for a drop-down menu. From this menu you can

- open the SM-2 module's **Setup** window,
- open the SM-2 module's **Fault History** window,
- use **Copy Configuration** to copy the SM-2 module's configuration settings to another SM-2 module,
- open the SM-2 module's **Graph** window.

Right-clicking anywhere on the faceplate (except the **Fault Bar)** will also open the drop-down menu.

Faceplate Positions

You can position faceplates anywhere within a group window either by dragging and dropping or by tiling.

Drag and Drop

To drag and drop a faceplate, left-click on the faceplate label bar. Hold down the mouse button and drag the faceplate. Drop the faceplate in the desired position by releasing the mouse button.

Tiling

To tile faceplates, click on **Tools**>**Tile Modules**. The faceplates will be arranged automatically starting in the upper left corner of the group window.

Graphs

Graphs showing base and fire pressures and system events can be displayed at any time while production is running.

Faults

If a fault occurs during production, the OI will display a fault message and record the fault. Faults can be viewed and cleared through the OI.

Graphs

Graph Setup

Security Level Required: Supervisor

To set up graphing:

1. Click on **Tools**>**Options**. Click on the **Data Log** tab.
2. Make sure Data Logging is **Enabled**.
3. Set the maximum number of points per page (**Graph Max Points Per Page**) by clicking on the ▲ or ▼ arrows in the **Points** field or moving the slider bar under the field. Use the slider bar to change the value in large increments, use the arrows to change the value in small increments.

NOTE: The Data Logging Rate affects the time scale for a graph page. For example, if you have points set at 120 and the interval set at 30 seconds, each page will display 60 minutes of data (120 points x 30 seconds = 3600 seconds ÷ 60 seconds per minute = 60 minutes).

4. Set the maximum number days to store graph data (**Graph Data Storage**) by clicking on the ▲ or ▼ arrows in the **Max Number of Days Stored** field.

Viewing and Printing Graphs

Security Level Required: No Operator

NOTE: Data logging must be enabled for the OI to create graphs.

To view graphs, do one of the following:

- Click on the **Graphs** button on the tool bar.
- Click on **Options**>**Graphs** from an SM-2 module faceplate. Select **Base Pressure**, **Delta Pressure**, **or Base/Fire Pressure**.

NOTE: You can view graphs for any SM-2 module by clicking on the module's tab at the top of the graph window.

Graph Types

Three types of graphs are available:

Base Pressure — Base pressure over time.

Delta Pressure — Pressure drop from base over time, with high and low warning and alarm bands and High and Low Flow Warning and Alarm faults.

Base/Fire Pressure — Base and fire pressure over time, with High and Low Flow Warning and Alarm faults. This is the default setting.

To display the desired graph type, click on one of the radio buttons ◉ under **Select Graph Type**.

The legend under the graph shows the color codes used for pressures and events (warnings and alarms).

Left Axis Limits

Use **Select Left Axis Limits**, to scale the vertical axis limit values of a graph. There are two methods:

- **Auto Scale–**scales the vertical axis values of the graph (pressure) automatically for better readability. Click on the **Auto Scale** checkbox to override the **Limits** vertical axis values for all guns. To revert back to the **Limits** vertical axis values, click on the **Auto Scale** checkbox to clear the checkmark.
- **Limits**–scales the vertical axis of the graph to preset values established by the user. The user can also copy a module's settings to another module, and turn **Auto Scale** on or off, which overrides the **Limits** vertical axis values for the applicable module.

NOTE: When **Auto Scale** is checked for selected guns on the **Limits** dialog box, the left axis will only be auto-scaled for that particular gun, as long as **Auto Scale** is **OFF** on the main **Graph** screen. When you copy a module's settings in **Limits**, the auto-scale is copied along with the minimum and maximum settings to the selected guns.

Entering Limit Values

Perform the following to enter limit values:

1. If necessary, click on the **Auto Scale** checkbox to clear the checkmark and disable **Auto Scale**.
2. Click on **Limits**. The **Axis Limits** window appears.
3. Enter values in the **Left Axis Minimum** and **Left Axis Maximum** fields.
4. Click on **OK** to save the values and exit the **Axis Limits** window.

Copying Limit Values

Perform the following to copy limit values from one module to another:

1. If necessary, click on the **Auto Scale** checkbox to clear the checkmark and disable **Auto Scale**.
2. Click on **Limits**. The **Axis Limits** window appears.
3. From **Select Modules**, click on the checkbox for the applicable guns.
4. Enter values in the **Left Axis Minimum** and **Left Axis Maximum** fields.
5. Click on **Copy**. The values are copied to the applicable guns.
6. Click on **OK** to exit the **Axis Limits** window.

Auto Scroll/Page

The **Auto Scroll/Page** feature automatically scrolls the displayed page as new data is graphed. To stop auto scrolling, click on the **Auto Scroll/Page** check box to clear the checkmark.

Dates and Pages

When you open the **Graph** window, it displays the last page of a graph of the current day's data. To display other pages or graphs for other days, do one of the following:

- To display other pages of the graph for the same day, click on the **First**, **Prev**, **Next**, or **Last** buttons at the bottom of the graph. If one or more of these buttons are grayed out, no additional pages are available.
- To display graphs for a specific day, click on the  arrow in the **Date** field under **Select Date for Graph**. Scroll through the list until you find the date you want and click on it.

- To scroll through the graphs for previous or later dates, click on the 

or 

buttons at the bottom of the graph. If one or both of these buttons are grayed out, no graph is available for previous or later dates.

NOTE: Graph data is only stored for a user-configurable number of days. Refer to Graph Setup.

Printing Graphs

To print a graph, click on the **Print** button. The PC must be connected to a printer, and the printer must be set up in Windows.

Troubleshooting

SM-2 Chip Versions

Security Level Required: No Operator

SM-2 modules use a network chip and a program chip. These chips can be replaced to upgrade CanWorks programming and communications. If you call your Nordson representative for technical support, you may be asked to provide the version numbers of the chips in your SM-2 modules.

1. To view chip versions click on **Options**>**Setup** on the module faceplate. Click on the **Configuration**.
2. The chip version numbers are displayed in the two fields in the upper right corner of the window. The **N Version** is the network chip version; the **P Version** is the program chip version.

Hardware Tests

Security Level Required: No Operator

The hardware tests check the functioning of the SM-2 module warning and alarm LEDs and relays. To run a hardware test:

1. Click on **Options**>**Setup** on the module faceplate. Click on the **Hardware Test** tab.
2. Click on the **Fault LEDS** button. Each click of this button toggles an LED. Click until ON appears in both LED fields. Make sure the LEDs on the SM-2 module are lit (depending on the Failsafe status setting).
3. Click on the **Fault Relays** button. Each click of this button toggles a relay. Click until ON appears in both Relay fields. Make sure the relays are opening or closing (depending on the Failsafe status setting) properly.

NOTE: ON must appear in both LED fields before you can turn on the relays.

About Faults

NOTE: Fault Status must be set to ON for a fault to generate a warning or alarm.

If a fault occurs, a **Fault Indicator Popup** (if enabled) appears in the center of the screen. The faceplate bars of the affected SM-2 module(s) change from green to yellow (warnings) or to red (alarms). The faceplate fault bar text changes to **Warning** or **Alarm**. On the SM-2 module affected, the yellow warning LED or the red alarm LED lights. If the warning or alarm fault relay is enabled, it is activated.

Fault History

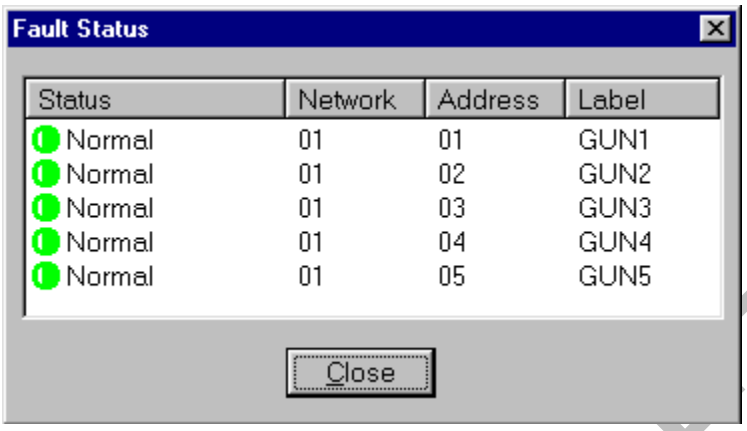
The Fault History window allows you to

- view the current fault status; the fault message; the date and time it occurred; the base, fire, and delta pressures at the time of the fault; and Fault Help for the current fault.
- reset the current fault for a module, all current faults for a module, or all current faults for all modules.

Fault Status

Security Level Required: No Operator

Clicking on the **Fault Status** button on the tool bar opens a window (see below) that you can use to monitor the status on all SM-2 modules, no matter what group the main window is displaying. If a fault should occur, the green bullets will change color: yellow for warnings, red for alarms.



Viewing and Resetting Faults

Security Level Required: No Operator

Use one of the following methods to open the **Fault History** window:

- Click on the **Faults** button on the tool bar, then click on the module's tab.
- Click on the fault bar on the module's faceplate.
- Click on **Options>Faults** on the module's faceplate.

Viewing Faults

- To view the Current Fault and History for a module, click on the module's tab at the top of the window. If more than one fault is current (not reset), the first fault that occurred is shown.
- To view a new fault if one occurs while the **Fault History** window is open, click on the **Refresh Faults** button.
- To list the faults by fault type, click on the **Summarize by fault type** checkbox, then click on the **Refresh Faults** button.
- To limit the types of faults shown in the **History** list, uncheck the faults you do not want listed by clicking on the check boxes in the **Select SM2 Alarms** and **Select SM2 Warnings** lists, then click on the **Refresh History** button.

Resetting Faults

NOTE: Correct the condition that caused the fault before resetting the fault. If you do not, the fault will re-occur.

- To reset the **Current Fault**, click on the **Reset Fault** button.
- To reset all current faults for a module if more than one fault is current, click on the **Reset All Faults This Module** button.
- To reset all current faults for all modules, click on the **Reset All Faults All Modules** button.

Fault Help

To view a list of possible causes of the current fault, open the **Fault History** window and click on the **Fault Help** button. This will open the help topic specific to the current fault. Possible causes for the fault are provided, along with ways to correct the fault.

Fault Troubleshooting

NOTE: Fault names that appear are dependent upon your application. Using the Low Pressure or High Flow fault name as an example, either **Low Pressure** or **High Flow** will appear in the **Fault** field. In either case, the possible causes and corrections for the faults are the same.

Low Pressure or High Flow

Possible Cause	Correction
Regulated pressure to spray gun too low	Reset pressure to value module was configured at, or configure a module to new value. Make sure product quality is acceptable at new pressure.
Blocked CO-Plate or worn nozzle	Remove nozzle and CO-Plate. Clean or replace.
Blockage in fluid system	Compare supply pressure to regulated pressure on display module. Clean or replace filter screens. Clean heater. Flush or replace fluid lines.
Air in system	Purge air from system.
Leak in supply system	Repair or replace leaking components.
Low pump output	Increase pump output. Check fluid supply to pump.

High Pressure or Low Flow

Possible Cause	Correction
Regulated pressure to spray gun too high	Reset pressure to value module was configured at, or set the pressure to a new value. Make sure product quality is acceptable at new pressure.
Blocked nozzle or worn CO-Plate	Remove nozzle and CO-Plate. Clean or replace.
Blockage in return line	Clean or replace back pressure device (fixed orifice assembly, circulation valve, ball valve). Flush or replace fluid lines.
Pump output too high	Decrease pump output.

Duration Too Short

Possible Cause	Correction
Spray duration too short	Minimum spray duration must be greater than 10 milliseconds.
ARM DELAY and **SMOOTHING** time longer than spray duration	Reduce smoothing time.

OI Requirements

CanWorks System Requirements

Minimum CanWorks System Hardware	1 CanWorks Display Module (UI-1) 1 CanWorks Spray Monitor II (SM-2) 1 network adapter (SLTA-10 serial adapter) CanWorks Operator Interface Tracking PLUS software
Maximum CanWorks System Hardware	6 CanWorks Display Modules (UI-1) 24 CanWorks Spray Monitor II (SM-2) modules 1 network adapter (SLTA-10 serial adapter) CanWorks Operator Interface Tracking PLUS software **NOTE:** The CanWorks OI supports only one 78Kbps network interface card. Therefore, all SM-2 modules monitored and controlled by the OI must be on the same network.
CanWorks Network Connections	Power and network wiring must be installed correctly. Network wiring must be connected in a daisy chain configuration and terminated at each end. The best practice is to terminate the network at the UI-1 module and at the last SM-2 module, connecting the OI network adapter in the middle. Refer to your UI-1 and SM-2 manuals for wiring and termination instructions, and to the SLTA-10 adapter manual for connection instructions. **NOTE:** If you connect the SLTA-10 network adapter to either end of the CanWorks network, you must terminate the adapter by installing a 121 ohm, 1%, ¼ watt metal film resistor across the network wiring terminals.
Required SM-2 Version	All SM-2 modules on the network must be at version NV05.06 or higher and PV05.00 or higher. Use the Test screen on the UI-1 display module to check version numbers before installing the OI software.
Data Logging Requirements	Date and time must be set correctly on the UI-1 display module. Refer to the *CanWorks Display Module* manual for instructions.

Minimum PC Requirements

Operating System	Windows® 98, Windows NT 4.0 (Service Pack 4), Windows 2000, Windows ME
Processor	Windows 98 and NT 4.0: Pentium 233MMX with 512 KB cache Windows 2000, Windows ME: Pentium II 450MMX with 512 KB cache
RAM	Windows 98: 32 MB Windows NT 4 and 2000, Windows ME: 64 MB
Video	SVGA, with 2 MB memory
Hard Drive	2 GB
Removable Media	CD-ROM drive
Monitor	15-in. color, SVGA
Keyboard	101 key AT
Mouse	Two-button serial or bus
Network Interface Card (NIC)	Echelon® SLTA-10 serial adapter and drivers. **NOTE:** Adapter drivers must be installed and configured properly before installing and running the OI. The SLTA Link Manager must be running to run the OI.
Display Settings	**Colors**: High Color (16 bit) **Resolution**: 1024 x 768 **Font Size**: Small Fonts **NOTE:** To set your display: Double-click on the **Display** icon in the **Windows Control Panel** or right-click on the desktop and select **Properties**. Click on the **Settings** tab. Click on the **Advanced** button to set fonts.